Wimberley Valley Clean Rivers Program Overview

Wimberley Valley Watershed Association

Thursday, March 29, 2018

No natural resource is more important to our future than Water. Water is what we do.

RESEARCH | STEWARDSHIP | SERVICE | EDUCATION | SERVICE

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Wimberley Valley Watershed Association

•advocate for clean, clear flowing springs and streams and the sustained health of the Wimberley Valley, and

•engage the community in land and water stewardship through research and education.

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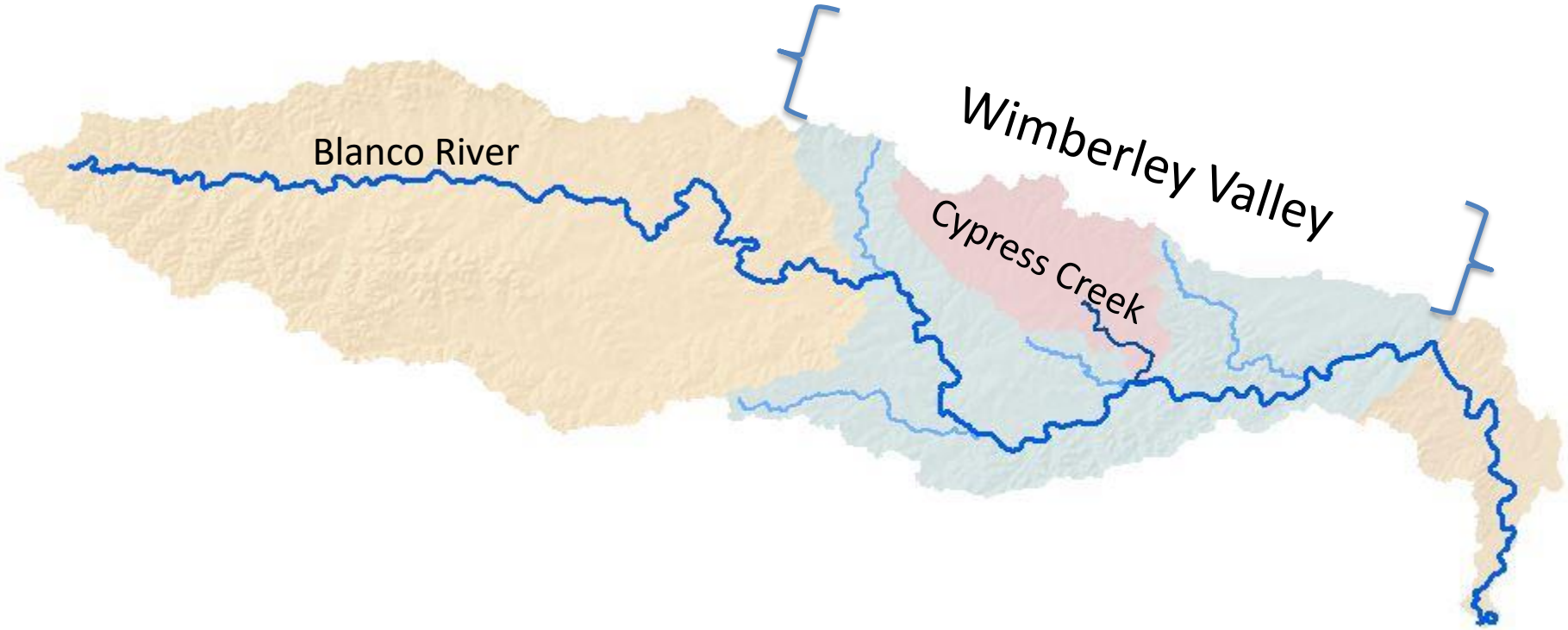
Wimberley Valley Watershed Association

- Clean Rivers Partner with GBRA
- GBRA monitors one site on Cypress Creek
  - Site 12674 "Cypress Creek at RR 12 Downtown"
- Added 4 additional sites from Jacobs Well to Blanco River confluence
- WVWA supports CRP and additional Blanco monitoring



- During wet periods, flow occurs along the entire reach of the Blanco River

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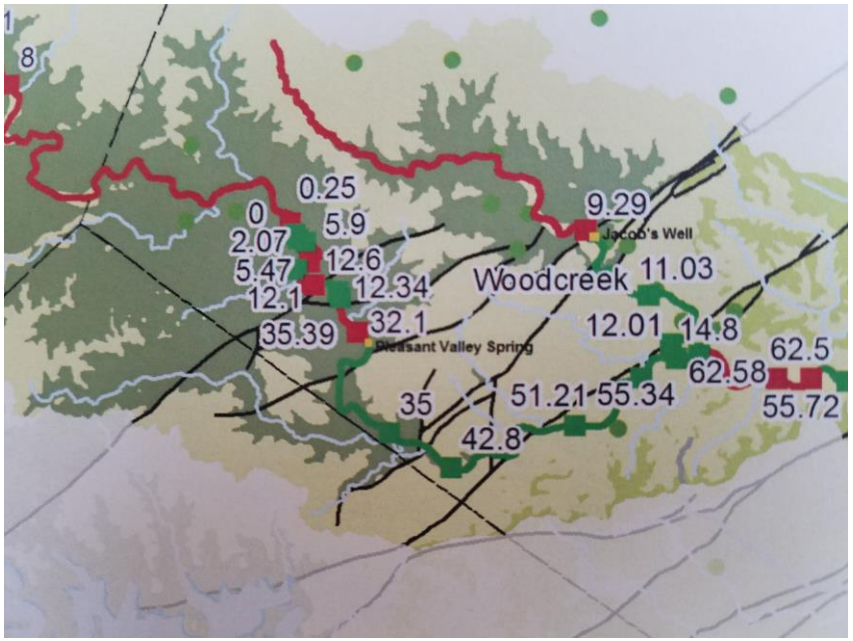
Gain/Loss Study Results from Blanco River, 2013



- During normal and drier periods, flow ceases in the initial reach of the lower Glen Rose
- Flow resumes through a series of small springs associated with small throw normal faults near Burnett Ranches
- Headwaters of the "lower" Blanco River

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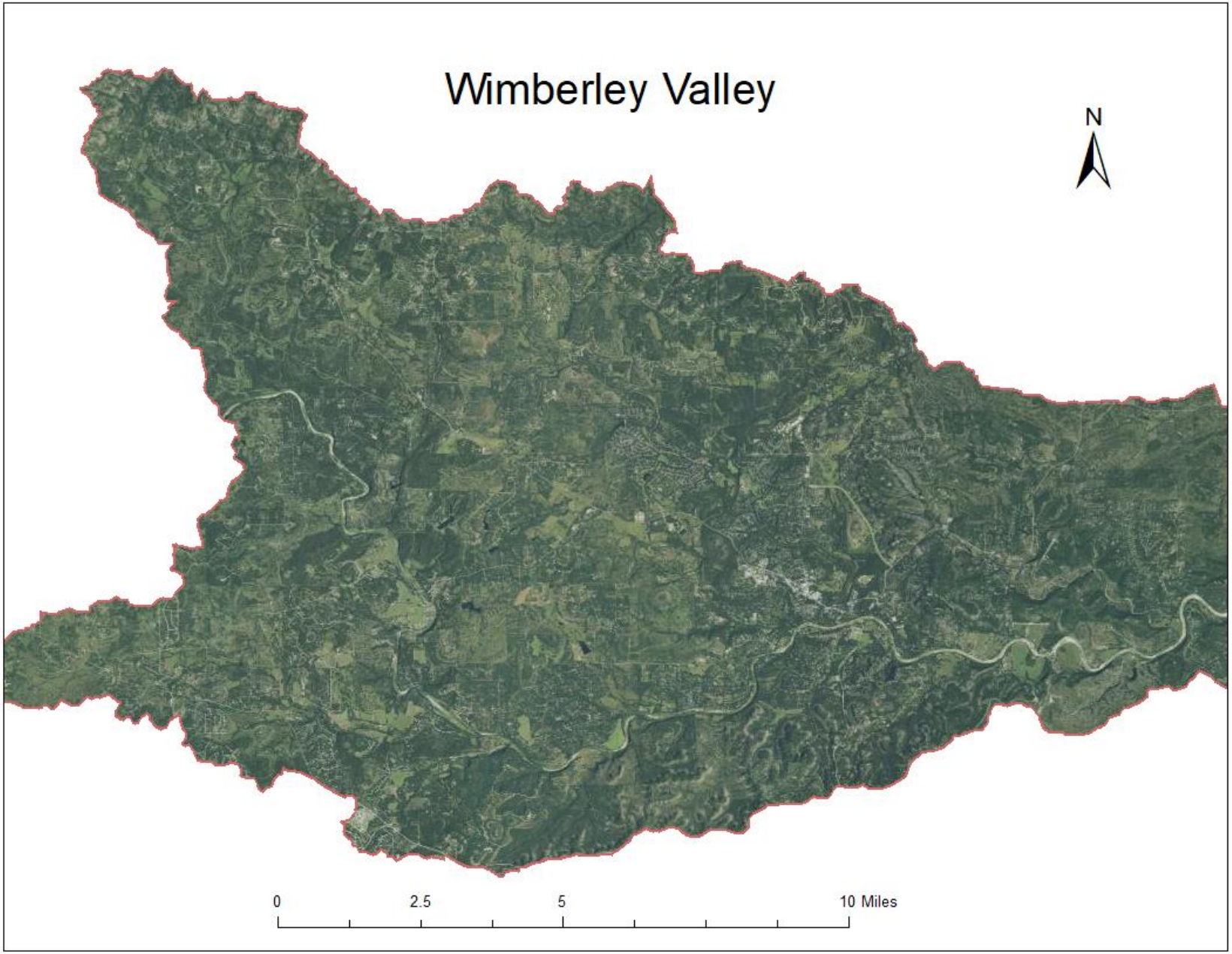

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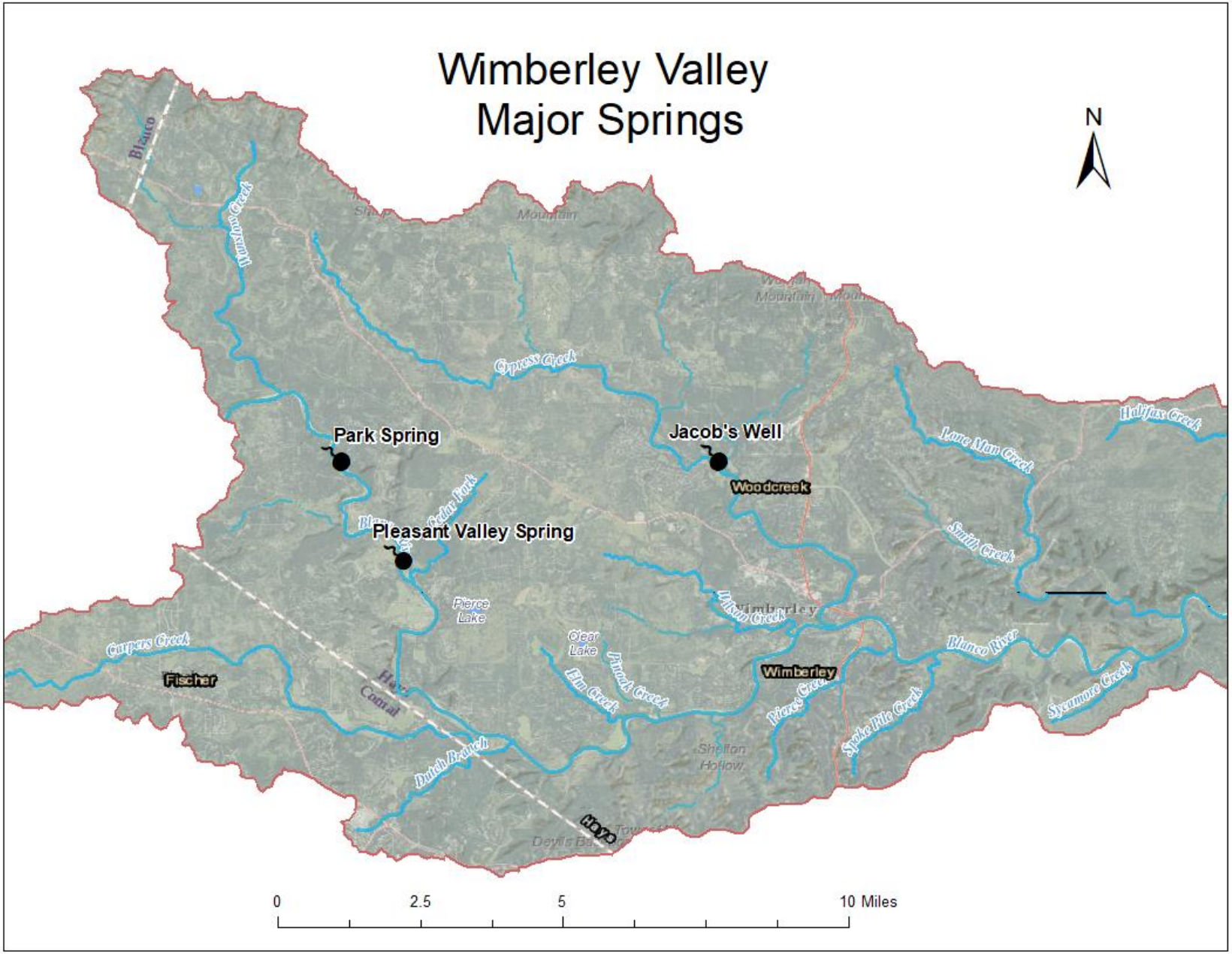

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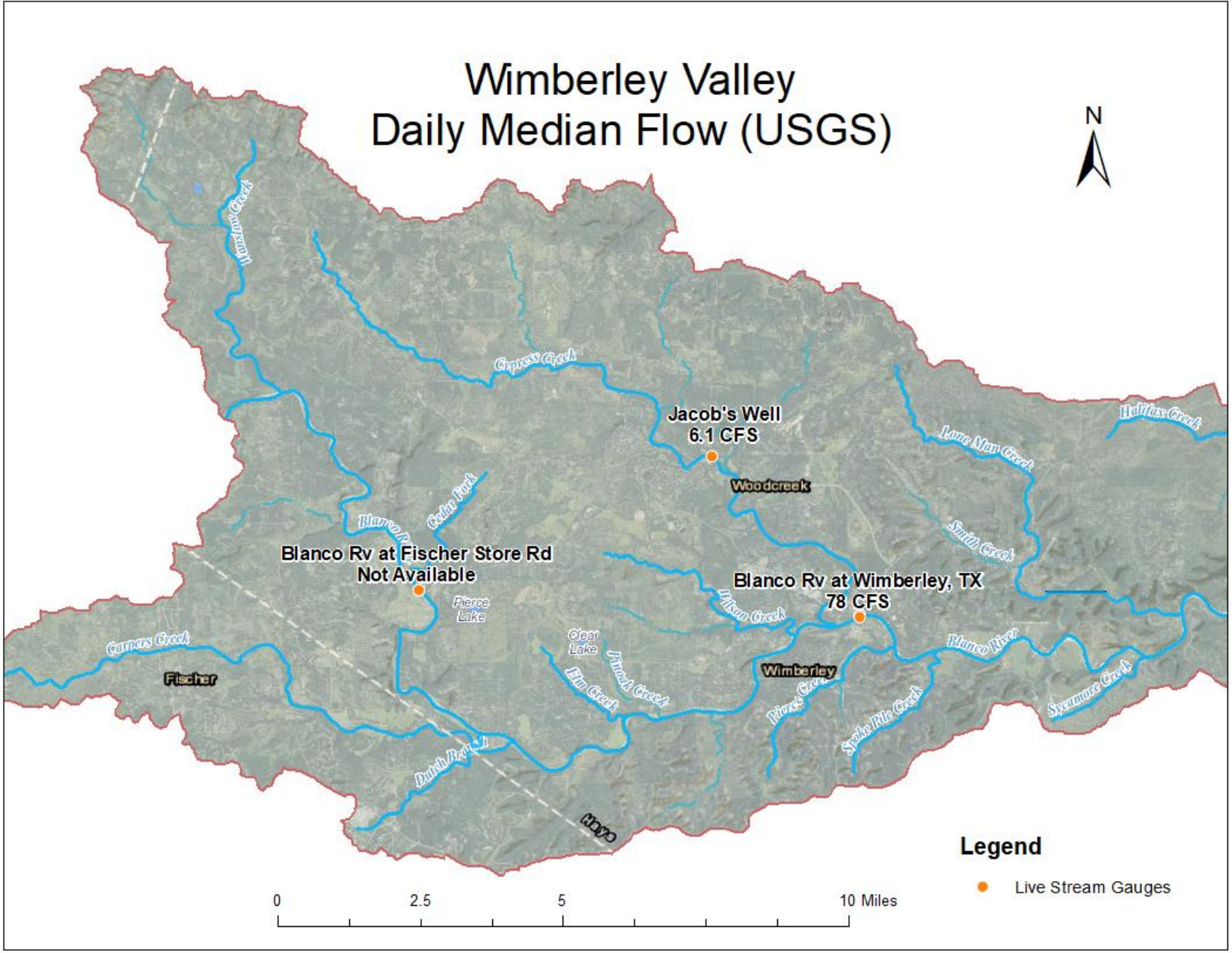

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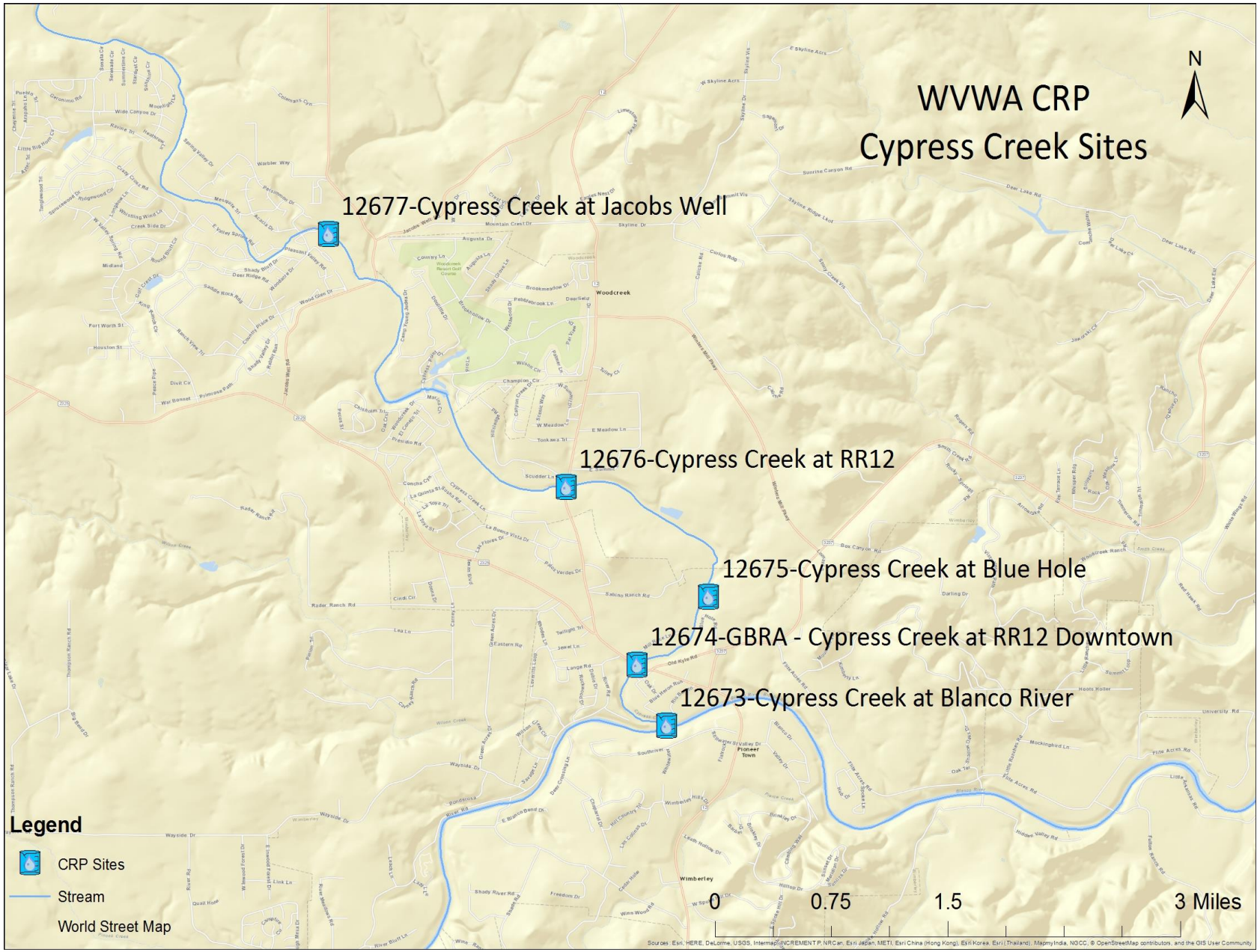
Cypress Creek CRP Data



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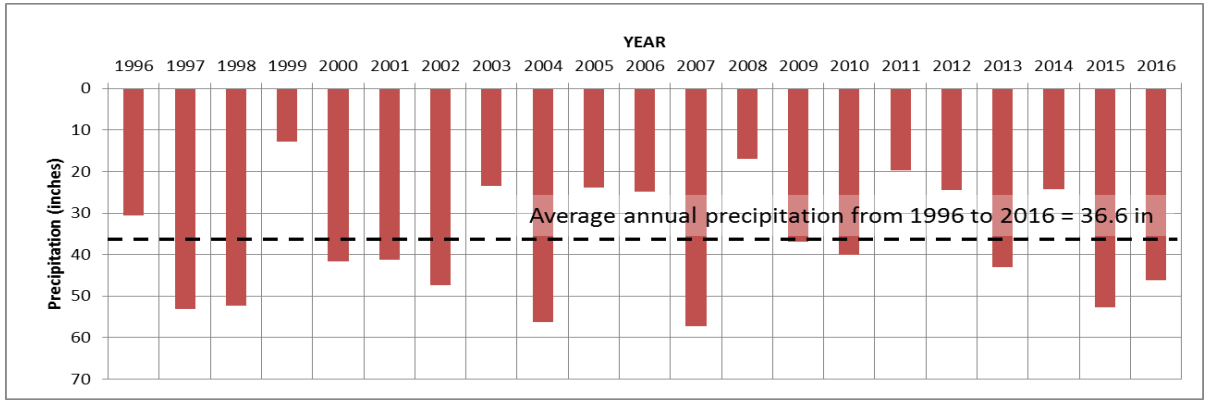
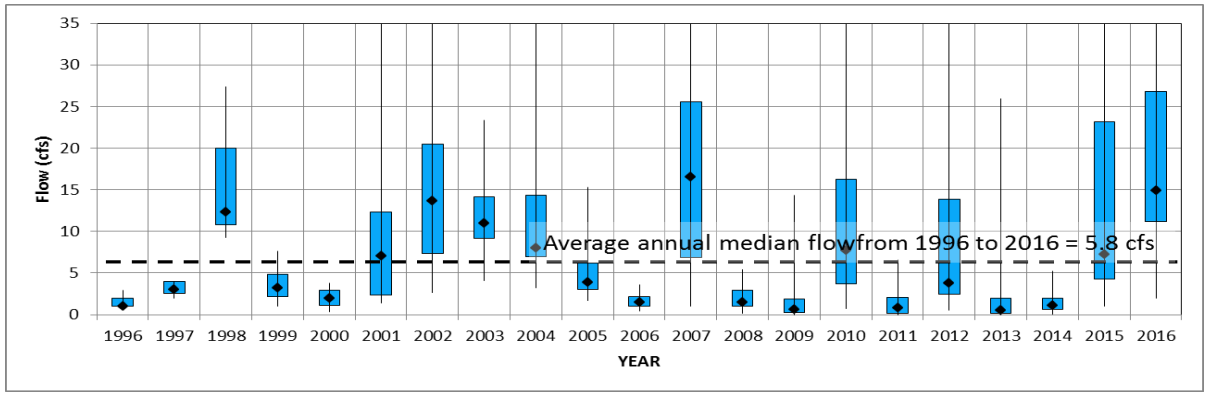
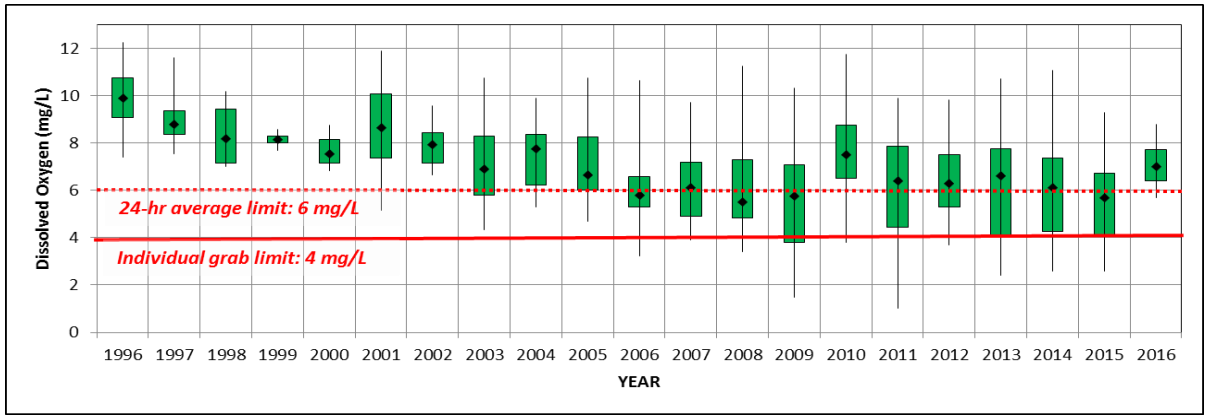


Annual Precipitation in the Cypress Creek Watershed (NCDC data from 1996 to 2016)

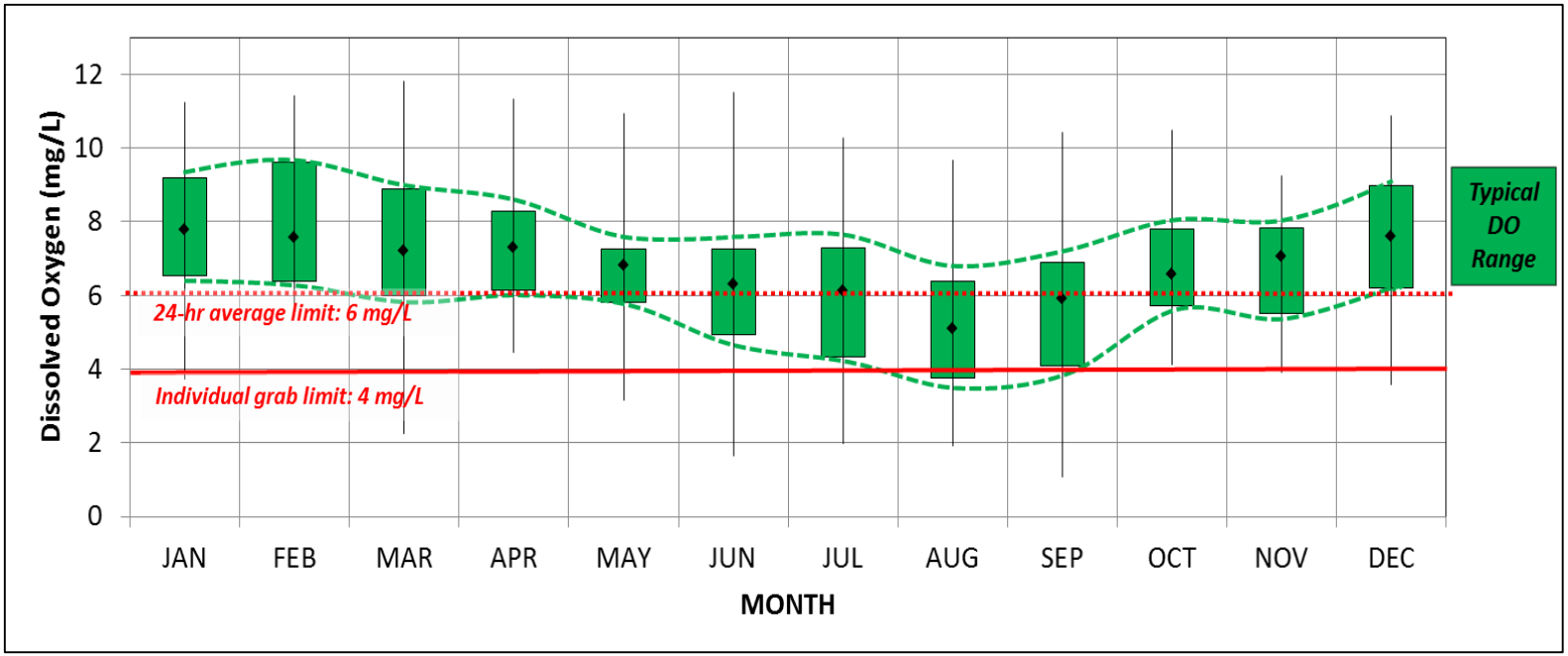


Range of flow measurements at Jacob's Well by year (USGS data from 1996 to 2016)



Range of DO measurements in Cypress Creek by year (CRP data from 1996 to 2016)

Cypress Creek Water Quality Report – Dissolved Oxygen



Range of DO measurements by month in Cypress Creek (CRP data from 1996 to 2017)

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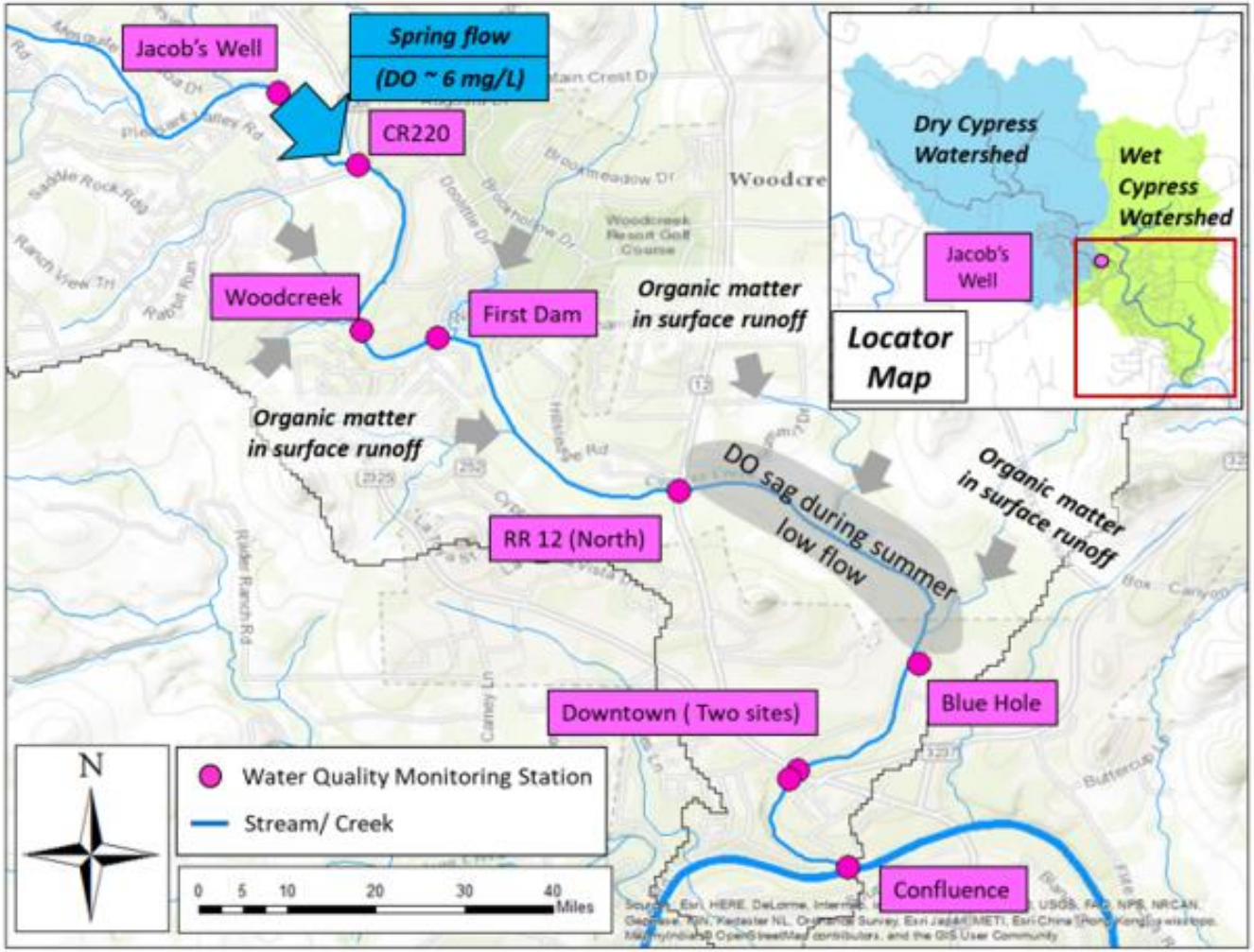
Map of DO spatial trends along Cypress Creek



- Organic matter can cause DO to decrease as it travels downstream
- Once the organic matter is depleted, DO recovers due to reaeration

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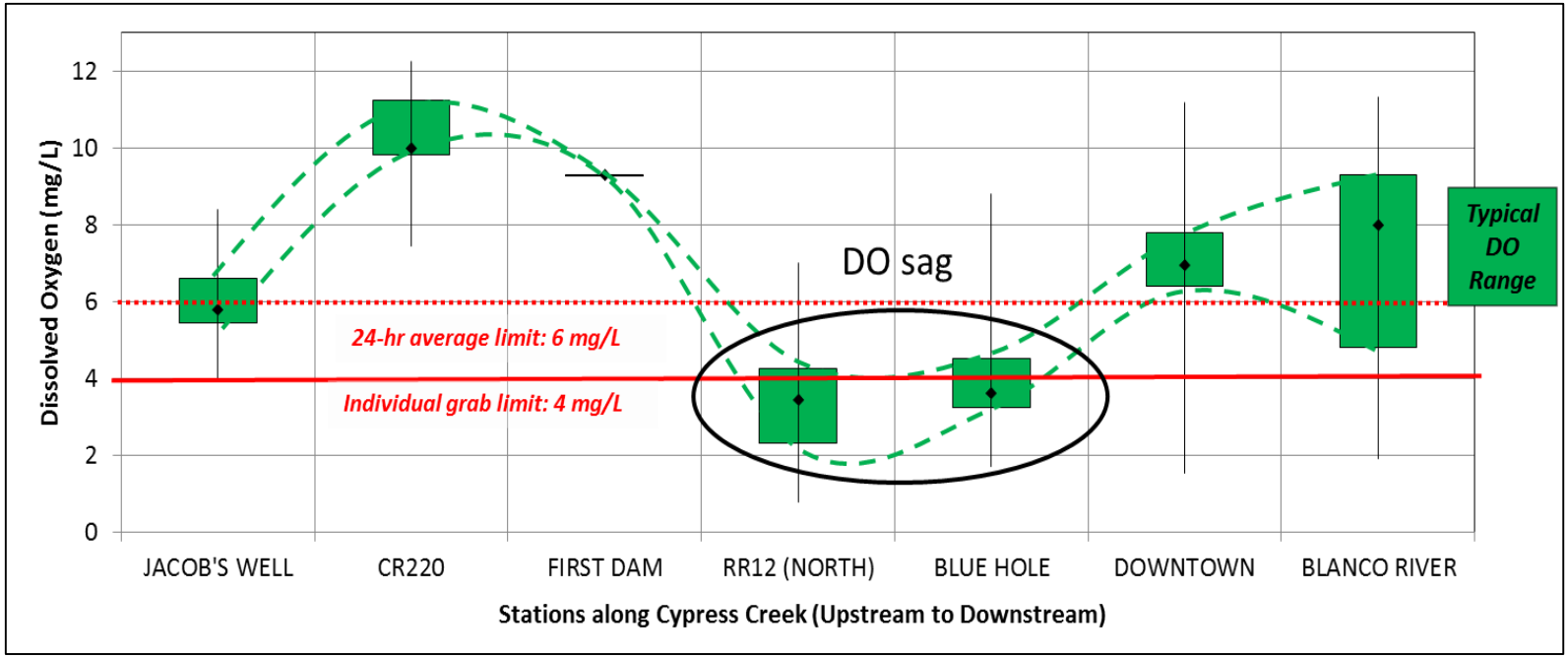
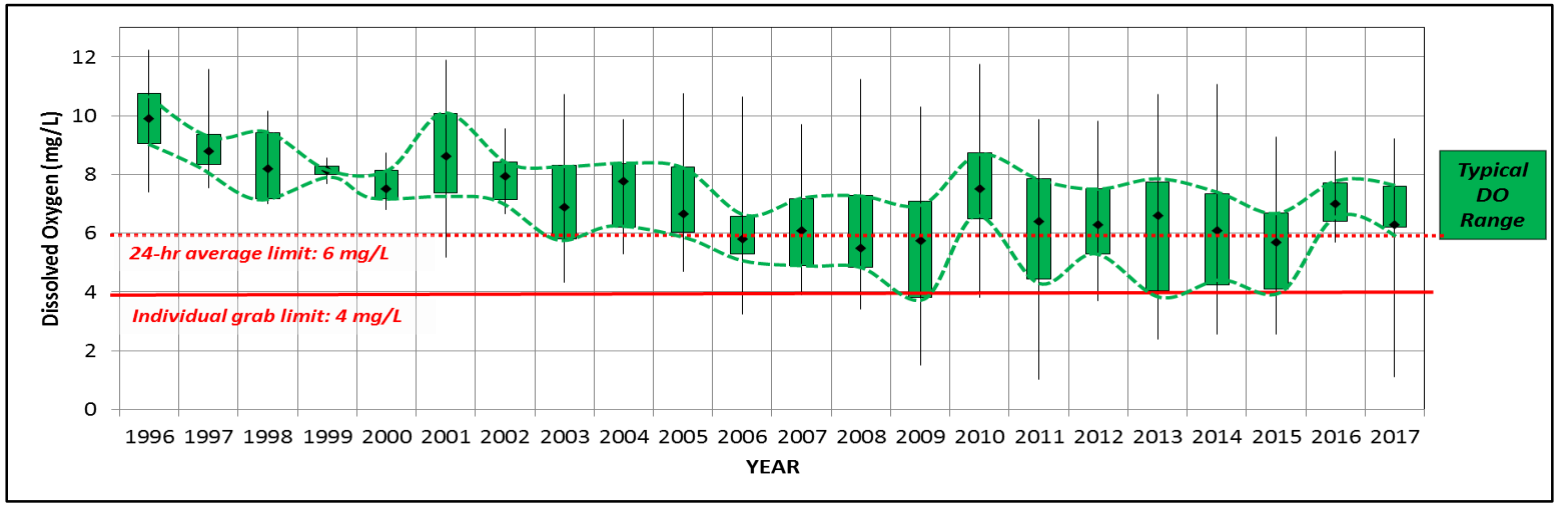


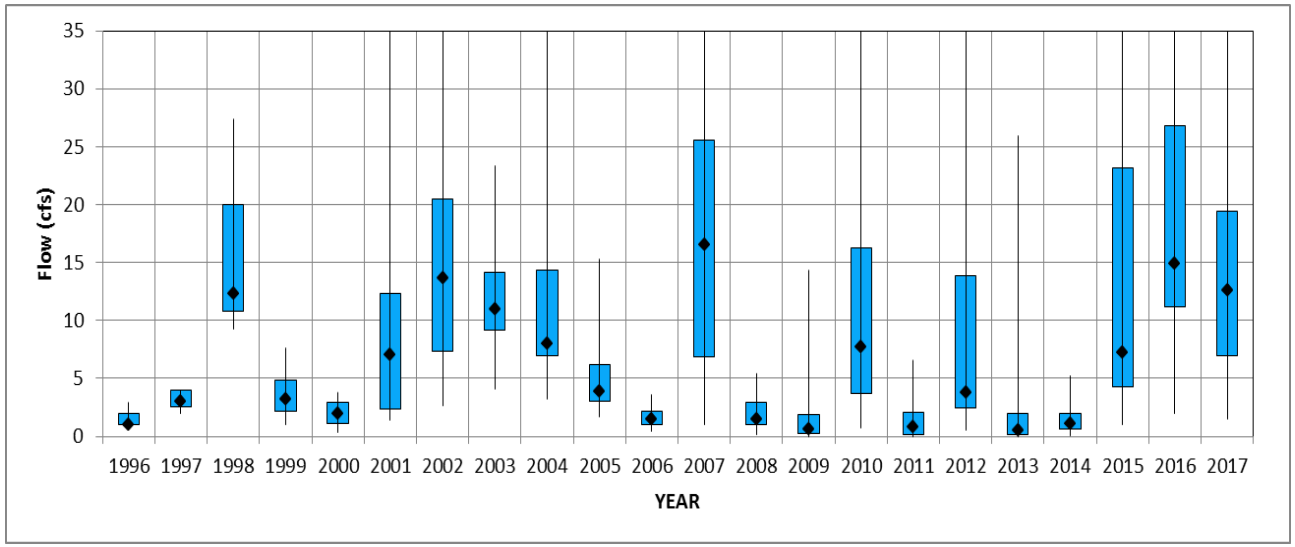
Range of DO measurements in Cypress Creek low flow conditions (CRP data from 1996 to 2017)

- The minimum DO that is observed along a stream is typically known as the DO sag

- Under summer low to medium flow conditions, the DO sag in Cypress Creek is usually found in the reach between RR12 (North) and Blue Hole



Range of DO measurements in Cypress Creek by year (CRP data from 1996 to 2017)



Range of flow measurements at Jacob's Well by year (USGS data from 1996 to 2017)

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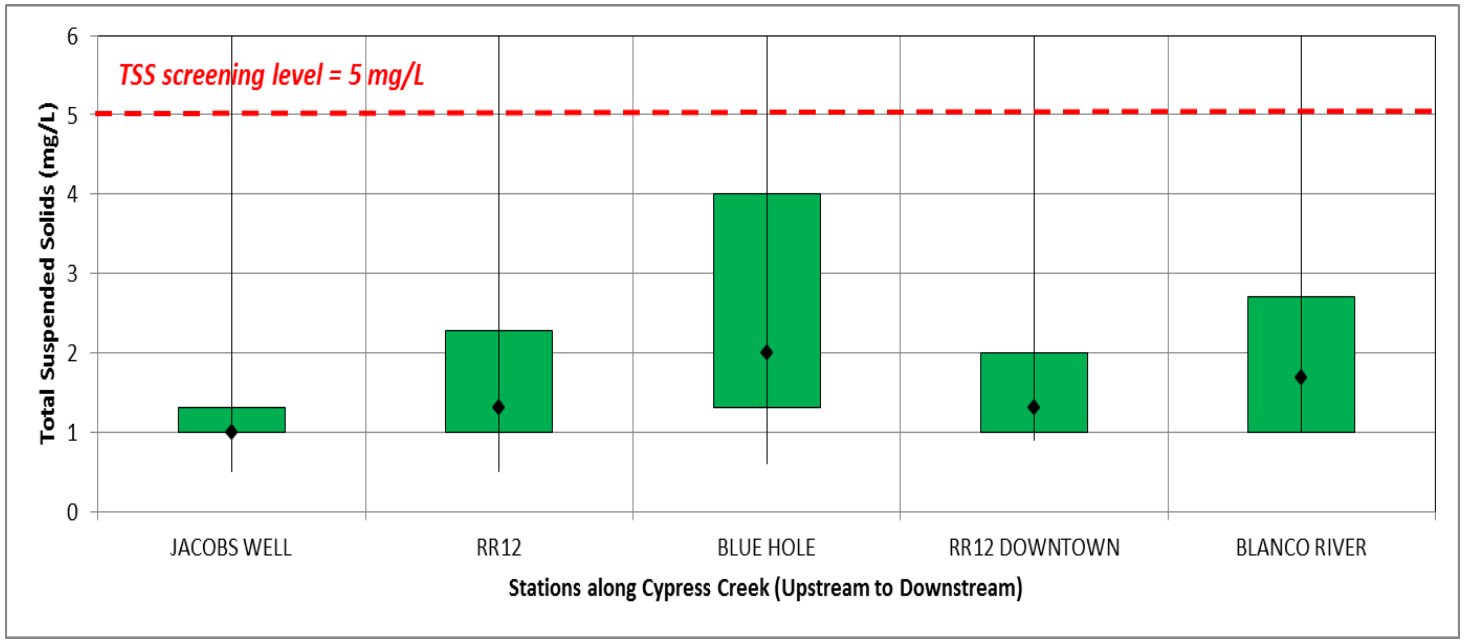
Cypress Creek Water Quality Report – Total Suspended Solids



Range of TSS measurements in Cypress Creek (CRP 2017 data from 1996 to 2017).

- Excluding rain events, measured TSS concentrations in Cypress Creek are typically below the screening level
- Spring flow from Jacob's Well is pristine (median TSS ~ 1 mg/L)
- As water travels downstream, it receives TSS from tributaries in the watershed. TSS tends to be highest near Blue Hole
- TSS decreases in the reach between Blue Hole and the confluence

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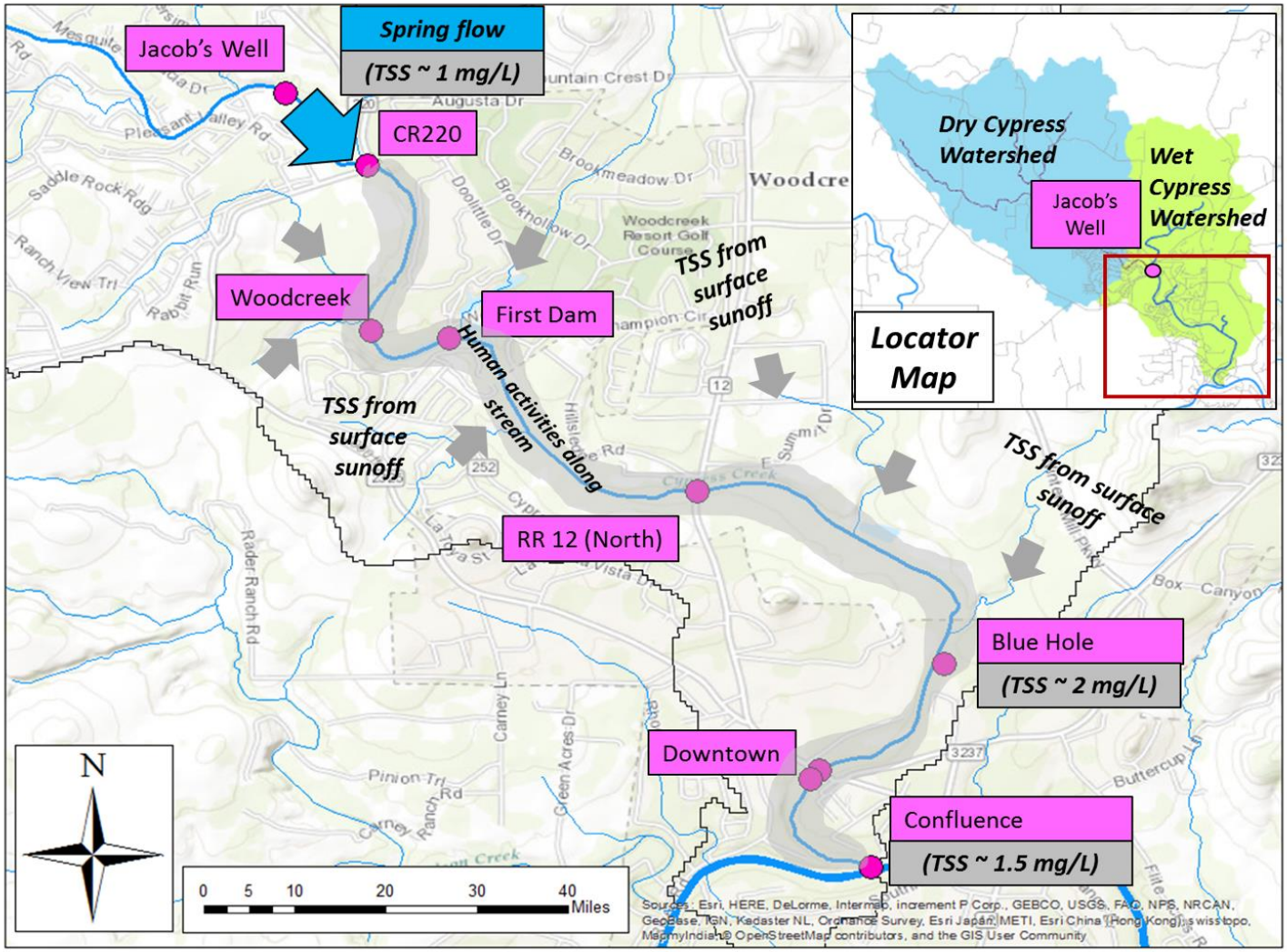
Map of TSS spatial trends along Cypress Creek



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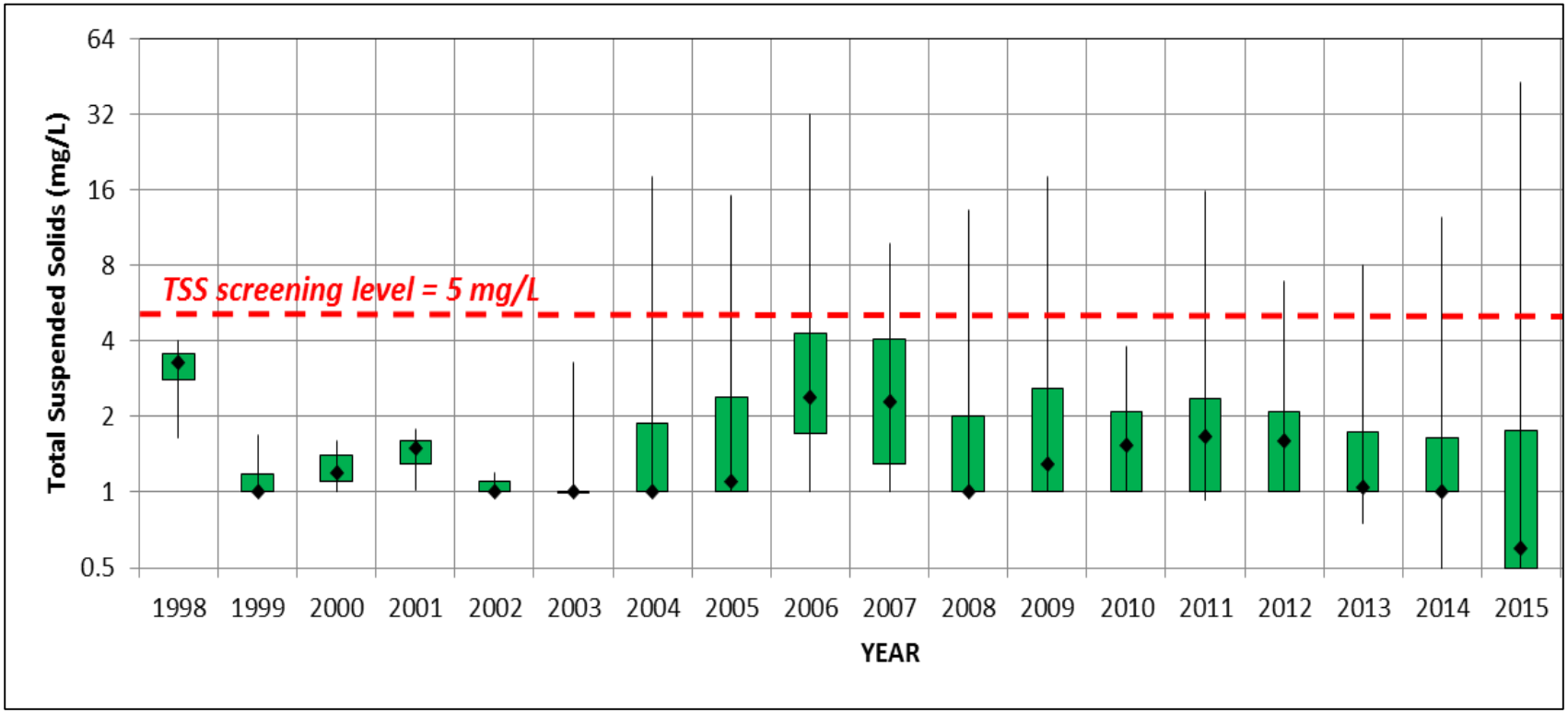
Historical Trends of all TSS measurements in all Cypress Creek Stations by year



Range of TSS measurements in Cypress Creek by year (CRP data from 1996 to 2017)

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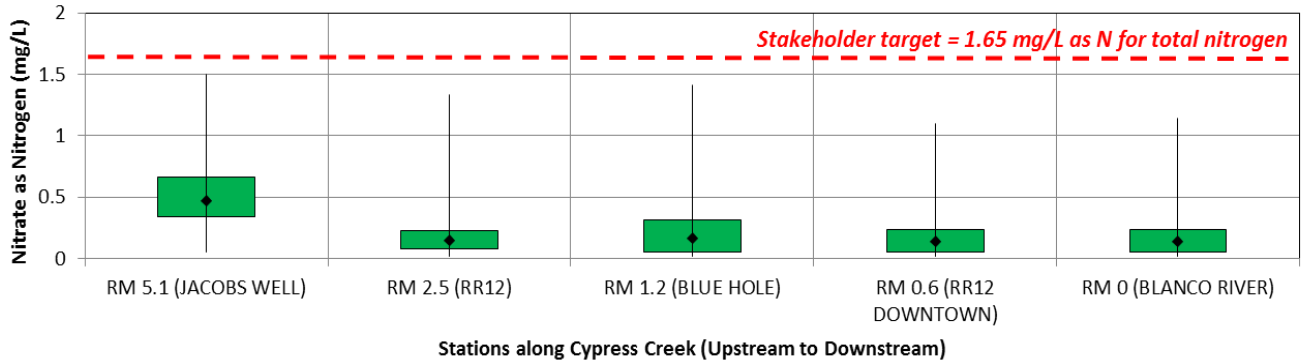
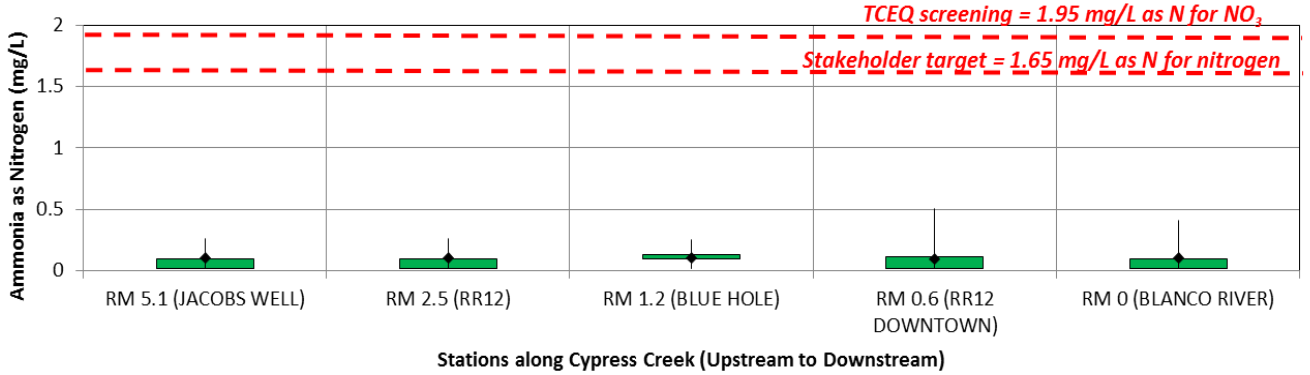
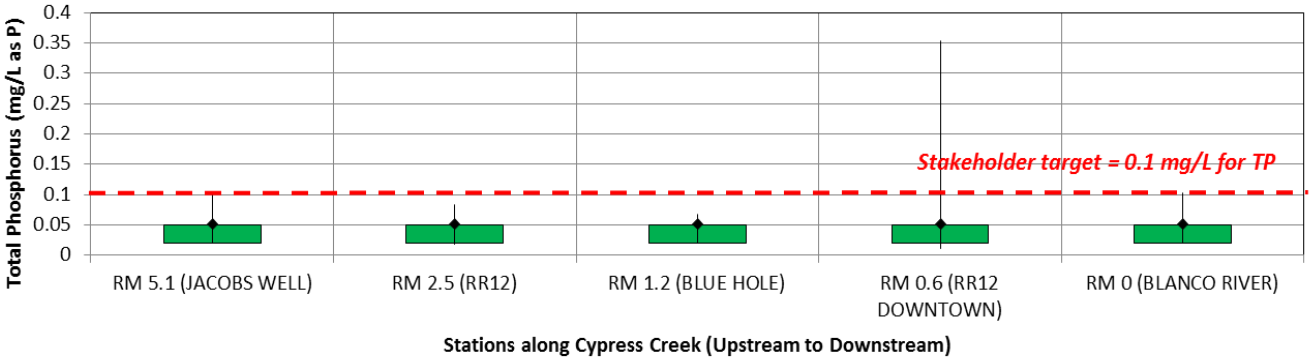
Cypress Creek Water Quality Report – Nutrients







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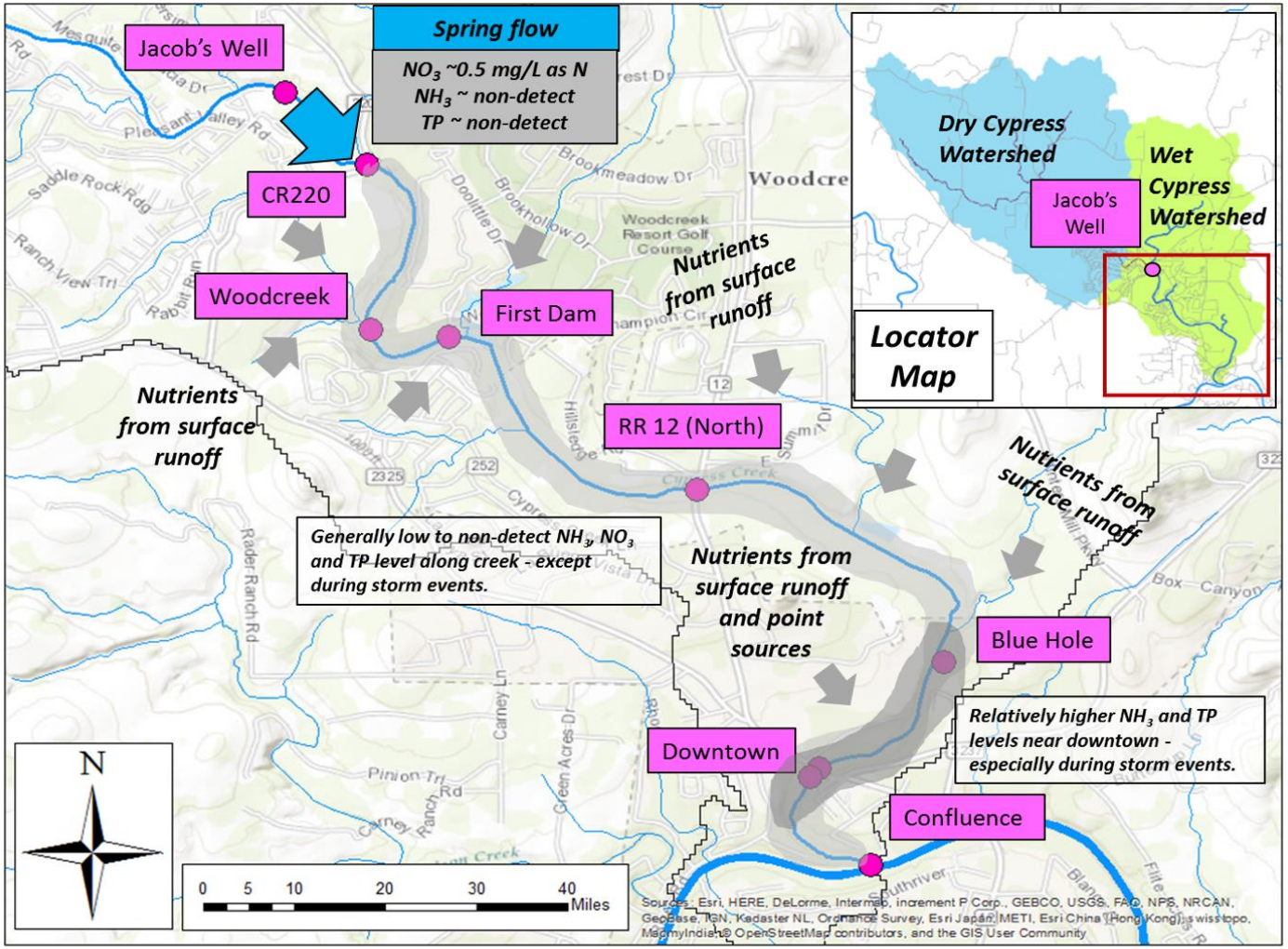
Map of nutrient spatial trends along Cypress Creek



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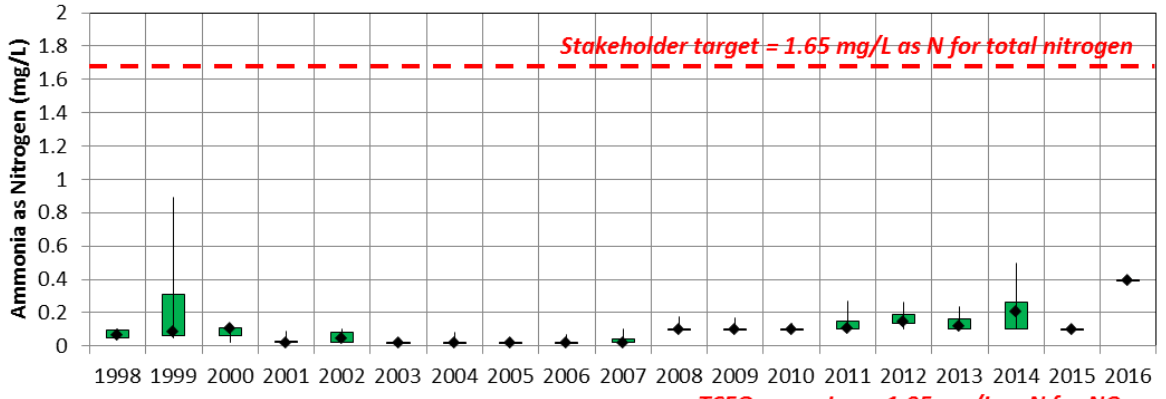
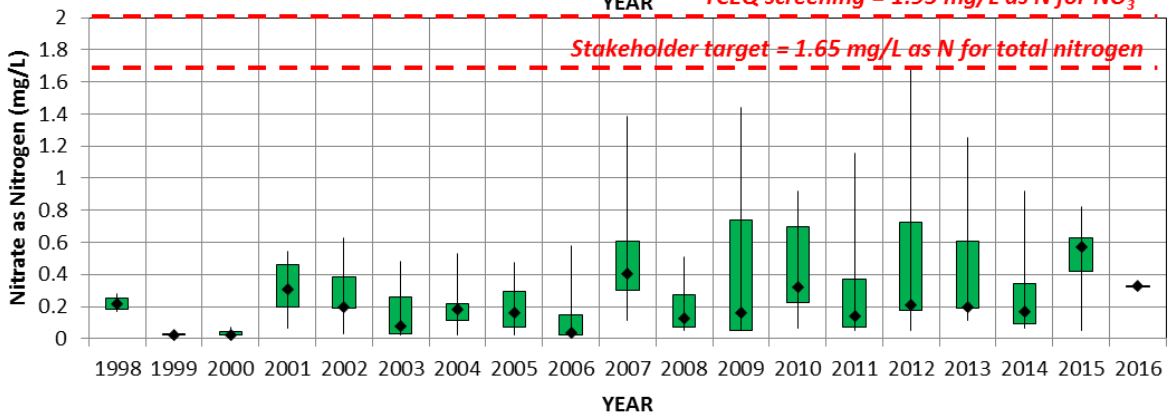
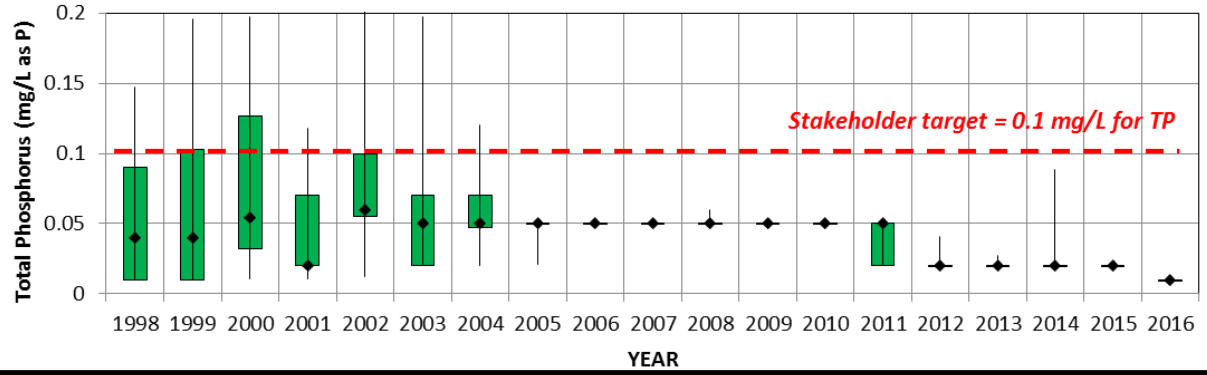
Range of NH_3, NO_3, TP measurements in Cypress Creek by year (CRP data from 1996 to 2017)







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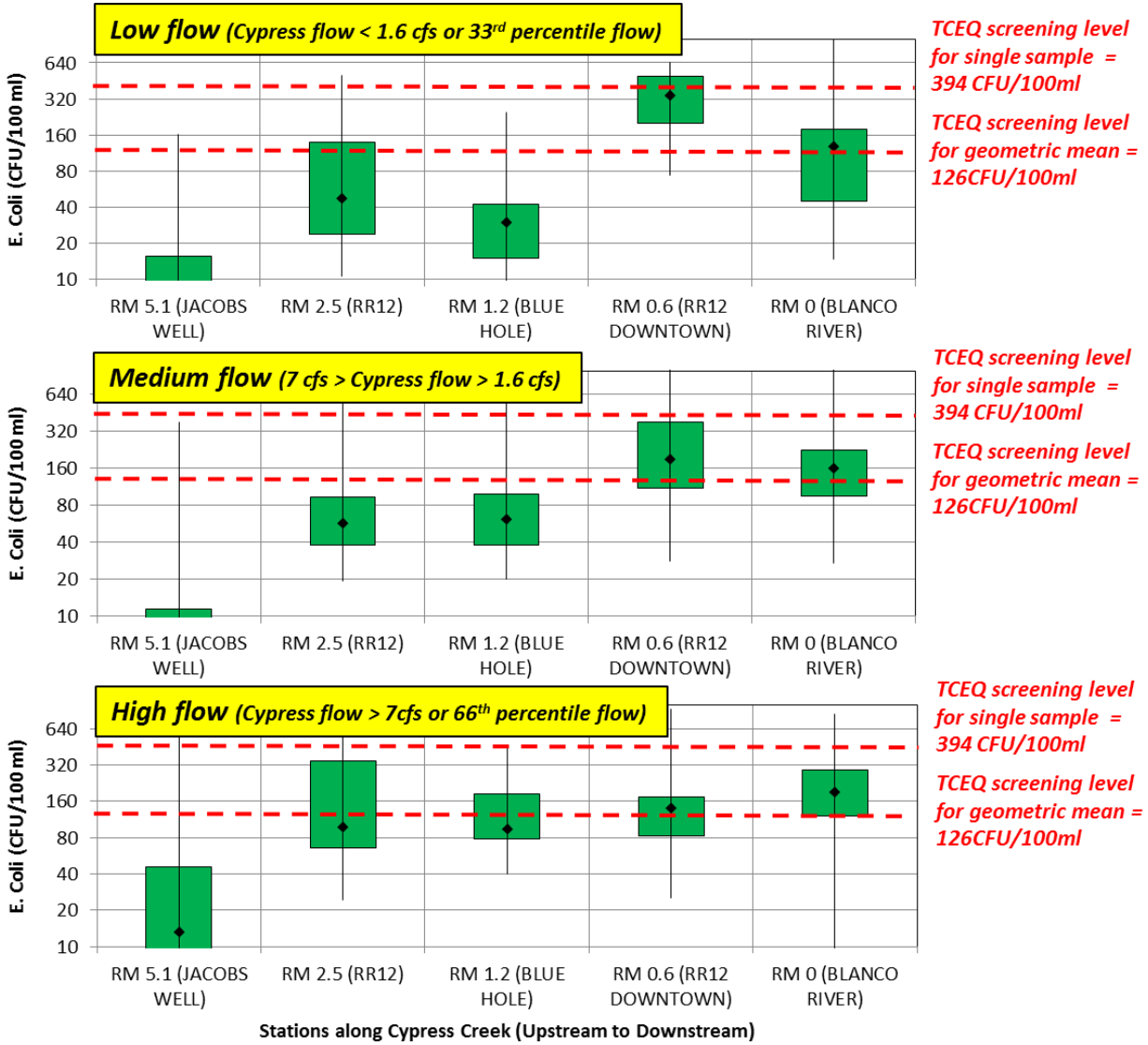
Cypress Creek Water Quality Report – *E. coli*



***E. Coli* Bacteria Measurements by Flow Regime in Cypress Creek (CRP data from 1998 to 2015)**

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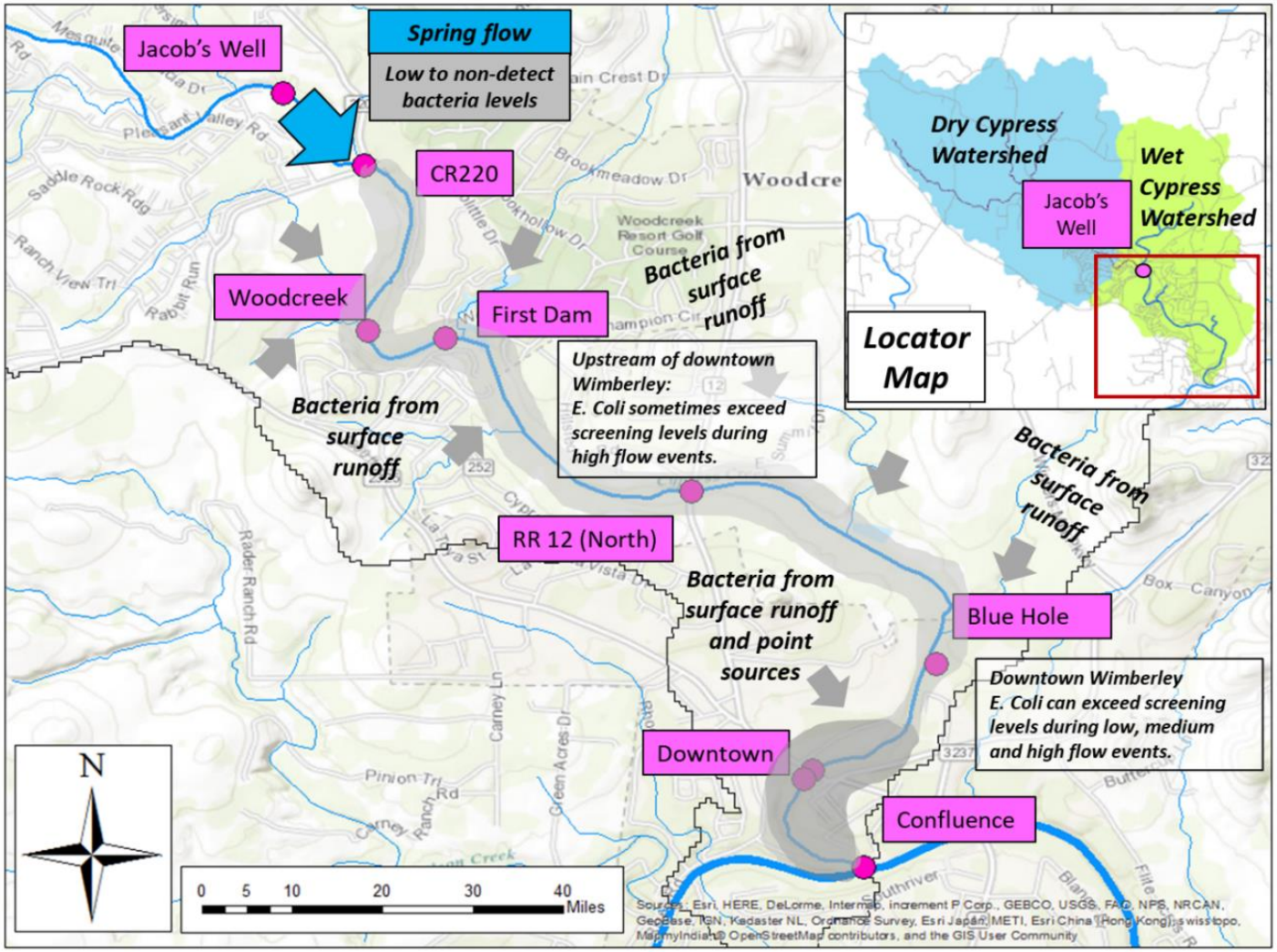
Map of *E. coli* spatial trends along Cypress Creek



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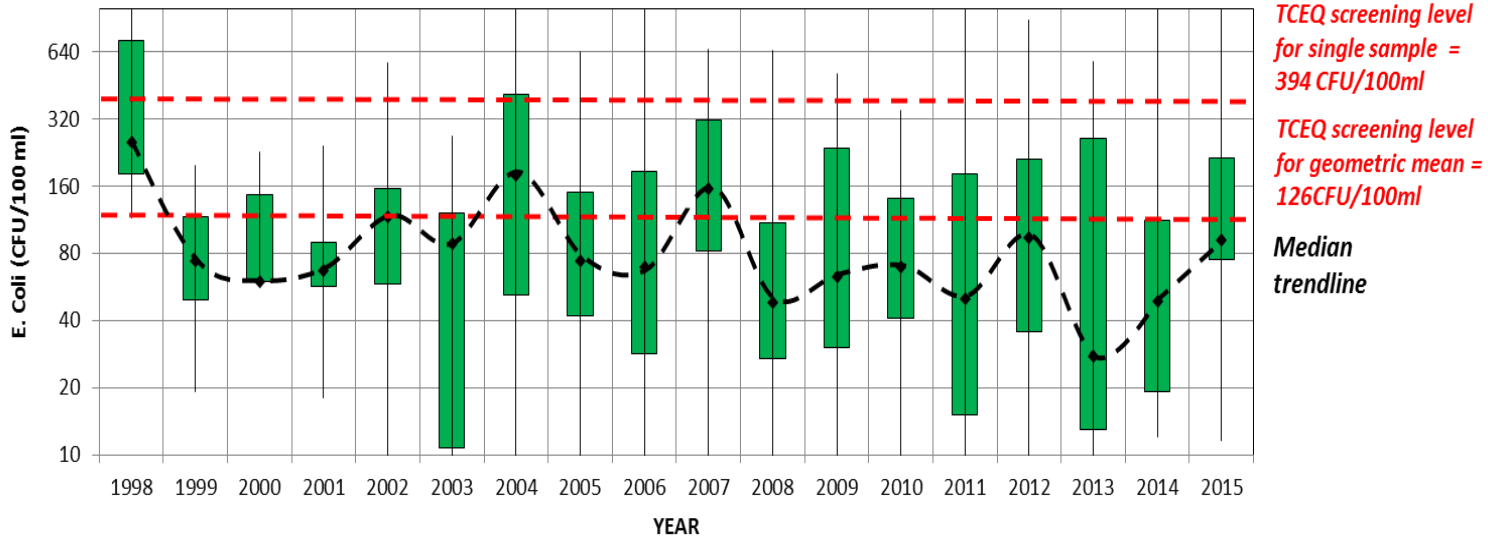
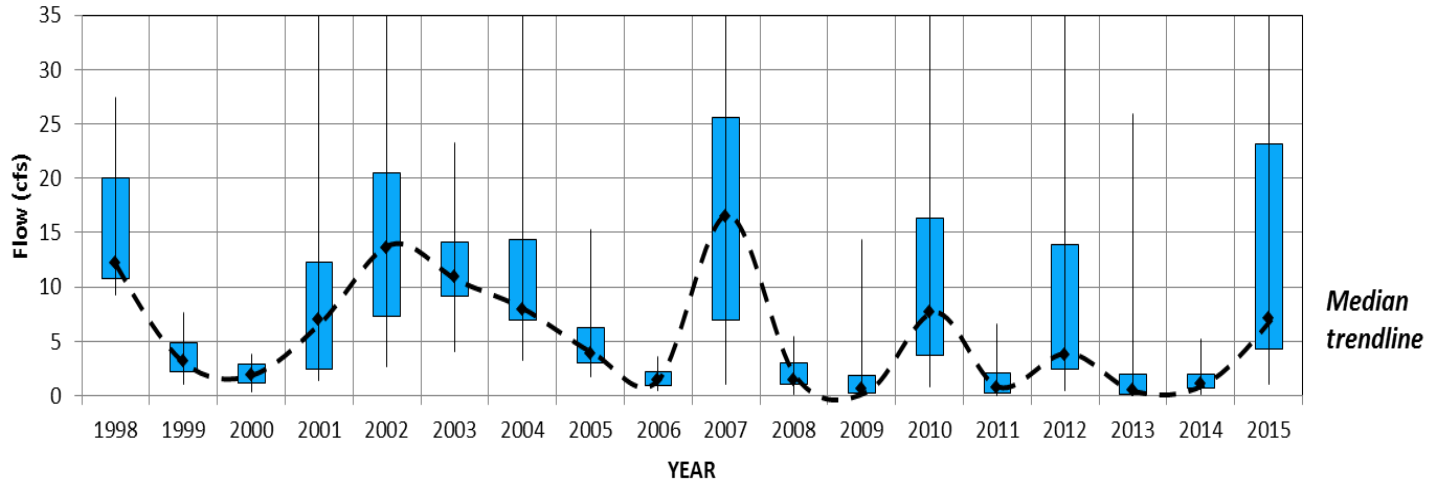
***In general, annual bacteria trends tend to be cyclical – higher median E. coli concentrations found in wet years and lower concentrations found in dry years.**



Range of *E. Coli* Measurements in Cypress Creek by Year (CRP data from 1998 to 2015)



Range of Flow Measurements at Jacob's Well by Year (USGS data from 1998 to 2015)

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Blanco River CRP Data

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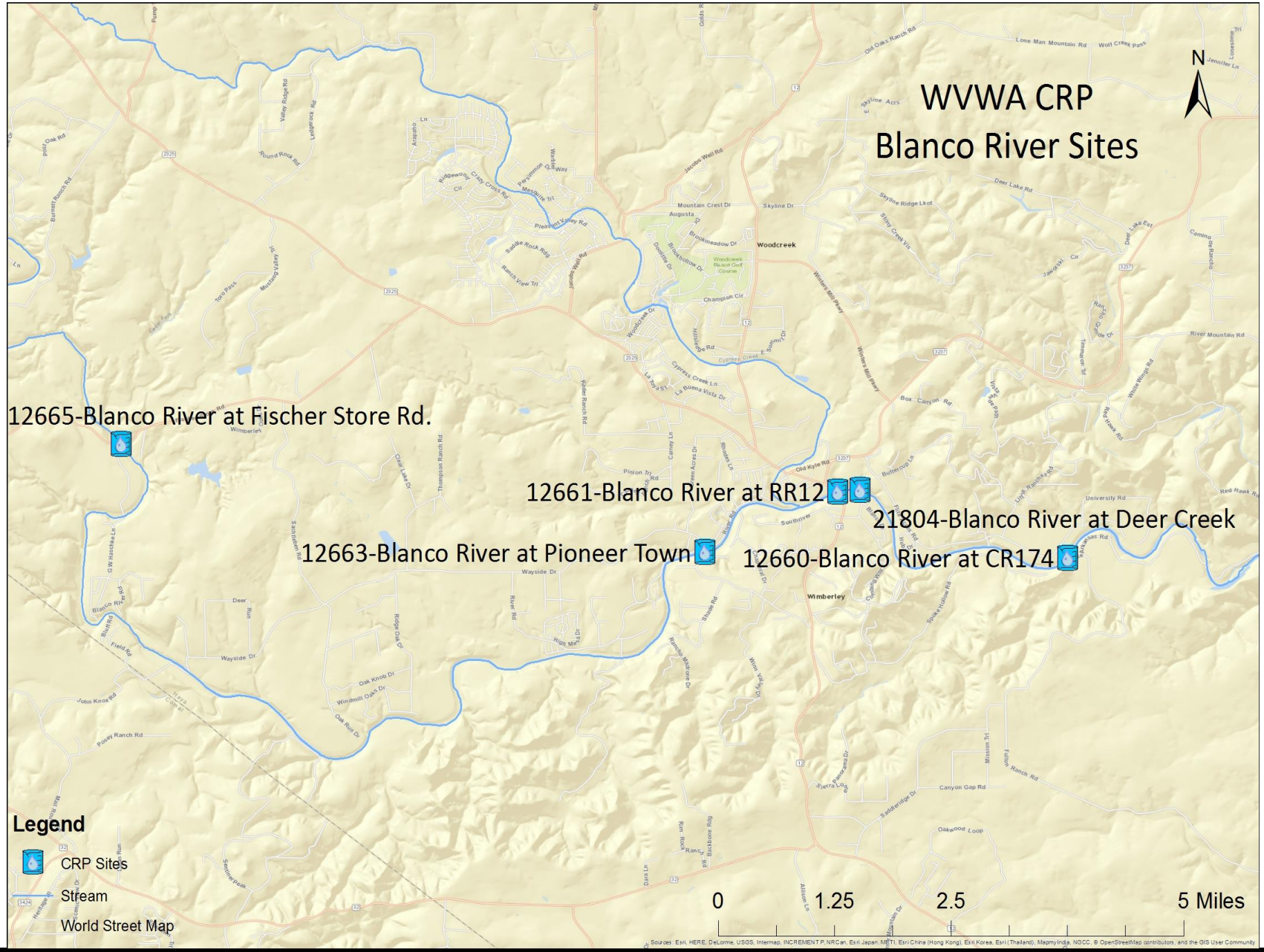

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Blanco River CRP Site Data

Parameter	12660	12661	12663	12665	21804
Total Suspended Solids (mg/L)	3.7	3.8	4.7	2.1	2.1
DO (mg/L)	9.2	8.9	8.2	9.2	9.3
Conductivity (µS/cm)	465	478	481	556	516
pH	8.1	8	8	7.8	7.9
E. coli (MPN/100 mL)	38*	65*	94*	41*	86*
Nitrates (mg/L)	0.24	0.26	0.28	0.54	0.29
Total Phosphorus (mg/L)	0.05	0.04	0.04	0.02	0.02
*Geomean					

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Blanco River CRP All Data

Blanco River Data 1/13/1998 – 2/11/2017				
Parameter	**Number of Samples**	**Mean+ StDev**	**Min**	**Max**
Flow (CFS)	319	139 ± 476	2	4430
DO (mg/L)	373	8.81 ± 1.61	3.5	13.7
Total Suspended Solids (mg/L)	339	3.9 ± 6.5	0.5	49.7
Conductivity µS/cm	391	482 ± 61	341	838
Temperature (°C)	393	21.8 ± 6.0	9.1	36.5
pH	376	8.0 ± 0.3	6.8	9.3
E. coli (MPN/100 mL)	334	60 (Geomean)	2	4800
Ammonia (mg/L)	328	0.08 ± 0.06	0.02	0.3
Nitrates (mg/L)	337	0.28 ± 0.22	0.02	1.07
Total Phosphorus (mg/L)	333	0.04 ± 0.02	0.01	0.2

Questions?

THANK YOU

Michael Jones

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